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(54) DIGITAL CONTROLLER

(57) Abstract:

PURPOSE: To realize the high-speed response and high accuracy of a digital controller by adding a variable limiter circuit and a variable gain circuit.

CONSTITUTION: An adder 2 calculates the deviation ϵ between the control input (u) and the internal state value (y) of a control system. A limiter circuit 3 functions to change its limiting range according to the value of the deviation ϵ ; so that the rounding way of data is changed. A variable gain circuit 4 eliminates the variation of the loop gain caused by the rounding way of the deviation ϵ ; and ensures the fixed loop gain of a control system. In such a constitution, even the large deviation ϵ does not affect the internal limit value of the control system and therefore the control value (y) can follow quickly the control input (u). Furthermore the highly accurate follow-up is possible in accordance with the deviation

ϵ ; even though this deviation is small.

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